



Figure 24

(1) Sequence of promoter CsVMV (Example 1A) (SEQ ID NO:1):

tctagaaactagcttcagaaggtattatccaagatgtagcatcaagaatccaatgtttacgggaaaaactatggaag  
tattatgtgagctcagcaagaagcagatcaatatcgggcacatatgcaacctatgttcaaaaatgaagaatgtacagatacaagat  
cctatactgccagaatacgaagaagaatacgtagaaattgaaaaagaagaaccaggcgaagaaaagaatcttgaagacgtaag  
cactgacgacaacaatgaaaagaagaagataaggctcgggtattgtgaaagagacatagaggacacatgtaagggtggaaaatgt  
aaggcggaagtaaccttatcacaaggaatcttatccccactacttatccttttatattttccgtgtcattttgcccttgagtttc  
ctatataaggaaccaagttcggcatttgtgaaaacaagaaaaatttggtgtaagctattttcttgaagtactgaggatacaacttca  
gagaaatttgaagtttga

Total 532 bp

(2) Sequence of zinc finger protein 2C7 binding site (Example 1A) (SEQ ID NO:2):

GCG TGG GCG GCG TGG GCG

Total 18 bp.

(3) Sequence of promoter pc7rbTATA (Example 1A) (SEQ ID NO:3):

cccggtatataataagcttggcattccggtactgttggttaaagccacat

Total 51 bp.

(4) Sequence of pND3008 coding region (Example 1B) (SEQ ID NO:4):

agcgtgaccggctcgtgccctctctagagataatgagcattgcatgtctaagttataaaaaattaccacatattttttg  
tcacacttgttgaagtgcagtttatctatctttatatacatattttaactttactctacgaataatataatctatagtactacaataatca  
gtgttttagagaatcatataaatgaacagttagacatggtctaaaggacaattgagtatttgacaacaggactctacagttttatctt  
ttagtgtgcatgtgttctcttttttttgcaaatagcttcacctatataatacttcatccattttattagtagacatccatttagggtttagggtt  
aatggttttatagactaatttttttagtacatctattttattctatttagcctctaaattaagaaaactaaaactctatttttagtttttattta  
ataatttagatataaaatagaataaaaataaagtgactaaaaataaacaataaccctttaagaaattaaaaaaactaaggaaacatttt  
tctgttttcgagtagataatgccagcctgttaaacgccgtcgacgagtctaacggacaccaaccagcgaaccagcagcgtcgcg  
tcgggccaagcgaagcagacggcacggcatctctgtcgtgcctctggacccctctcgagagttccgctccaccgttggaacttg  
ctccgctgtcggcatccagaaattgcgtggcggagcggcagacgtgagccggcacggcaggcggcctcctcctcctctcacg  
gcacggcagctacgggggattccttccaccgctccttcgtttccctcctcgtcccgccgtaataaatagacacccctccaca

ccctcttccccaacctcgtgtgttcggagcgcacacacacacacacagatctccccaaatccacccgtcggcacctccgctt  
caaggtagccgctcgtcctccccccccccccctctaccttctctagatcggcgttcgggtccatgggttagggcccggtagtgc  
tacttctgtcatgtttgtgttagatccgtgtttgtgttagatccgtgctgtagcgttcgtacacggatgcgacctgtacgtcagacac  
gttctgattgctaacttgccagtgtttctctttggggaatcctgggatggctctagccgttcgcgagacgggatcgatttcattgtttt  
tttgttcgttgcataggggtttggtttgcccttttctttatttcaatatatgccgtgcacttgtttgtcgggtcatctttcatgctttttgt  
cttgggtgtgatgatgtggtctggttggcggtcgttctagatcggagtagaattctgttcaaactacctggtggatttattatgttgg  
atctgtatgtgtgtgccatacatattcatagttacgaattgaagatgatggatggaaatatcgatctaggataggtatacatgttgatg  
cgggttttactgatgcatacacagagatgcttttgttcgcttggttgatgatgtggtgtggttggcggtcgttcattcgttctagat  
cggagtagaatactgttcaaactacctggtgtatttattatgttgaactgtatgtgtgtgcatacatcttcatagttacgagttaag  
atggatggaaatatcgatctaggataggtatacatgttgatgtgggttttactgatgcatacatgatggcatatgcagcatctattc  
atatgcttaaccttgagtacctatctattataataaacaagtatgtttataatttttgatcttgatacttggatgatggcatatgca  
gcagctatatgtggatttttttagccctgccttcatacgtatttttcttggtagtcttcttttgcgatgctcacctgttgtttggtgt  
tacttctgcaggctcactctagaggatctatggcccaggcgccctcgagctcccctatgcttgcctgtcgagtcctcgatcgc  
cgcttttctaagtcggctgatctgaagcgccatatccgcatccacacaggccagaagcccttccagtgtcgaatatgatgcgtaa  
cttcagtcgtagtaccaccttaccaccacatccgcacccacacaggcgagaagccctttgcctgtgacatttgtgggaggaag  
tttgcaggagtgtatgaacgcaagaggcataccaaaatccataccgggtgagaagccctatgcttgcctgtcgagtcctcgatc  
gccgcttttctaagtcggctgatctgaagcgccatatccgcatccacacaggccagaagcccttccagtgtcgaatatgatgcgt  
aacttcagtcgtagtaccaccttaccaccacatccgcacccacacaggcgagaagccctttgcctgtgacatttgtgggagga  
agtttgcaggagtgtatgaacgcaagaggcataccaaaatccatttaagacagaaggactctagaactagtggccaggccggc  
caggctagcccgaaaaagaacgcaaagtggcgcgccgacgcgctggacgatttcgatctcgacatgctgggttctgatgc  
cctcgatgactttgacctggatatgttgggaagcgacgcattggatgactttgatctggacatgctcggtccgatgctctggacg  
atttcgatctcgatatgttaattaactacccgtacgacgttccggactacgcttcttgagaattcggcgccgccccgagccctag  
ggaggagctcaagatccccgaatttccccgatcgttcaaacatttggcaataaagtcttcttaagattgaatcctgttccgggtcttg  
cgatgattatcatctaatttctgttgaattacgttaagcatgtaataaataacatgtaatgatgacgttatttatgagatgggttttatga  
ttagagtcgccgaattatacatttaatacgcgatagaaaacaaatatagcgcgcaaactaggataaattatcgcgcgcggtgtca  
tctatgttactagatccgggaattgggtac

Total:	3121 bp
ZmUbi promoter:	44 bp to 2026 bp
Six finger ZFP2C7:	2060 bp to 2588 bp
Nuclear localization signal:	2620 bp to 2641 bp
VP64 activation domain:	2641 bp to 2805 bp

agcgtgacccggctgctgccccctctctagagataatgagcattgcatgctctaagttataaaaaataccacataatttttttg  
tcacacttgtttgaagtgcagtttatctatctttatacatataatttaaactttactctacgaataatataatctatagctactacaataatca  
gtgttttagagaatcatataaatgaacagtttagacatggctctaaaggacaattgagtatttggacaacaggactctacagttttatcttt  
ttagtggtcatgtgttctccttttttttgcaaatagcttcacctatataataacttcatcattttattagctacatccatttaggggttaggggt  
aatggtttttatagactaatttttttagctacatctattttattctatttttagcctctaaattaagaaaaactaaaactctatttttagttttttat  
ataatttagatataaaaatagaataaaaataaagtgactaaaaattaaacaaataccctttaagaaattaaaaaaactaaggaaacatttt  
tctgtttcgagtagataatgccagcctgttaaacgccgtcgacgagtctaacggacaccaaccagcgaaccagcagcgtcgcg  
tcgggccaagcgaagcagacggcacggcatctctgtcgtcgtcctctggaccctctcgagagttccgctccaccgttggaacttg  
ctccgctgtcggcatccagaaattgcgtggcgaggcggcagacgtgagccggcacggcagggcgctcctcctcctctcacg  
gcacggcagctacgggggattcctttcccaccgctccttgcgtttcccttctcgcggcgccgtaataaatagacacccccccaca  
ccctctttccccaacctcgtgtgttcggagcgcacacacacacaaccagatctccccaatccaccgctcggcacctccgctt  
caagggtacgccgtcgtcctccccccccccccctctctaccttctctagatcggcggttcgggtccatggttagggcccggtagttc  
tacttctgttcatgtttgtgtagatccgtgttgtgtagatccgtgctgtagcgttcgtacacggatgcgacctgtacgtcagacac  
gttctgattgctaacttgccagtgtttcttttggggaatcctgggatggctctagccgttccgcagacgggatcgtttcatgatttt  
ttgtttcgttgcataggggtttgggttgccttttctttatttcaatatatgccgtgcacttgttgtcgggtcatctttcatgctttttgt  
cttgggtgtgatgatgtggtctggttggcggtcgttctagatcggagtagaattctgtttcaaacctcgttggttttattatttgg  
atctgtatgtgtgtgccatacatattcatagttacgaattgaagatgatggatggaaatatcgatctaggataggtatacatgttgatg  
cgggttttactgatgcatatacagagatgcttttgttcgcttggttgatgatgtggtgtggttggcggtcgttcattcgttctagat  
cggagtagaatactgtttcaaacctcgttggtgtatttatttgaactgtatgtgtgtgcatacatcttcatagttacgagtttaag  
atggatggaaatatcgatctaggataggtatacatgttgatgtgggttttactgatgcatatacatgatggcatatgcagcatctattc  
atatgctctaaccttgagtacctatctattataataaacaagtatgtttataattttttgatcttgatatacttggtgatggcatatgca  
gcagctatatgtggatttttttagccctgccttcatacgtatttttgccttggtactgtttctttgtcgtatgctcaccctgtgtttggtgt  
tacttctgcaggctgactctagaggatccactagttagccatgggcttagcatggccgctgccgtgcgcatgaacatccagatgct  
gctcgaagccgctgattatctggaacgccgggagcgcgaagccgagcacggctacgccagcatgctgccatatccgaaaaag  
aaacgcaagggtggcccaggcggccctcgagctcccctatgcttgccctgtcagtcctgcgacgccgcttttctaagtcgggtg  
atctgaagcgccatatccgcatccacacaggccagaagcccttccagtgtcgaatatgcatgcgtaacttcagtcgtagtgacca  
ccttaccacccacatccgcacccacacagcgagaaagcccttttgcctgtgacattgtgtgggaggaagtttgccaggagtgatgaa

cgcaagaggcatacaaaatccataccggtgagaagccctatgcttgcctgtcagtcctcgatcgccgcttttctaagtcgg  
ctgatctgaagcgccatatccgcatccacacaggccagaagccctccagtgctgaatatgcatgcgtaacttcagtcgtagtga  
ccaccttaccacccacatccgcacccacacaggcgagaagccctttgcctgtgacattgtgggaggaagtttgcaggagtgat  
gaacgcaagaggcatacaaaatccatttaagacagaaggactctagaactagtgccaggccggcagtagccgtacgacg  
ttccggactacgcttctgaaagcttggtaccgagctcggtacccccgaatttccccgatcgttcaaacatttggcaataaagttctt  
aagattgaatcctgttgcggcttgcgatgattatcatctaatttctgtgaattacgttaagcatgtaataattaacatgtaatgcatg  
acgttatttatgagatgggttttatgattagagtcgccgaattatacatttaatacgcgatagaaaacaaaatatagcgcgcaaacta  
ggataaattatcgcgcgcggtgtcatctatgttactagatccgggaattccggaccggtaccagcggcc

Total:	3068 bp
ZmUbi promoter:	44 bp to 2026 bp
SID repression domain:	2066 bp to 2173 bp
Nuclear localization signal:	2174 bp to 2194 bp
Six finger ZFP2C7:	2207 bp to 2735 bp
HA epitope tag:	2762 bp to 2791 bp
Nos terminator:	2820 bp to 3112 bp

(6) Sequence of 6X2C7 binding site (SEQ ID NO:6):

cgtgctagcgcgtggcgggcggtgggcgaacaagcgtggcgggcggtgggcgaacaagcgtggcgggcggtgggc  
gactagtgtagcgcgtggcgggcggtgggcgaacaagcgtggcgggcggtgggcgaacaagcgtggcgggcggtgggcgac  
tagtg

Total: 156 bp

(7) Sequence of 3 finger protein C7 (SEQ ID NO:73):

atggcccaggcgccctcgagccctatgcttgcctgtcagtcctcgatcgccgcttttctaagtcggctgatctga  
agcgccatatccgcatccacacaggccagaagccctccagtgctgaatatgcatgcgtaacttcagtcgtagtgaccaccttac  
caccacatccgcacccacacaggcgagaagccctttgcctgtgacatttggggaggaagtttgcaggagtgatgaacgcaa  
gaggcatacaaaatccatttaagacagaaggactctagaactagtgccaggccggccaggctagc

Total: 314 bp

(8) Amino acid sequence of 3 finger protein C7 (SEQ ID NO:74):

MAQAALPYACPVESCDRRFSKSADLKRHIRIHTGQKPFQCRICMRNFSR  
SDHLTTTHIRTHTGEKPFACDICGRKFARSDERKRHTKIHRLRQKDSRTSGQAGQAS

Total: 105 aa

(9) Sequence of zinc finger protein ZFPap3 binding site (SEQ ID NO:7):

GAT GGA GTT GAA GAA GTA

Total: 18 bp

(10) Sequence of zinc finger protein ZFPm1 and ZFPm2 binding site m12: (SEQ ID NO:76):

GCC TCC TTC CTC CTC TCA CTC

Total: 21 bp

ZFPm1 binding site: compliment strand of 1 to 18

ZFPm2 binding site: compliment strand of 4 to 21

(11) Sequence of zinc finger protein ZFPm3 and ZFPm4 binding site m34 (SEQ ID NO:77):

GCC AAC TAC TAC GGC TCC CTC ACC

Total: 24 bp

ZFPm3 binding site: compliment strand of 1 to 18

ZFPm4 binding site: compliment strand of 7 to 24

(12) Partial sequence of pMal-m1 (1-3300 bp) and zinc finger protein ZFPm1 (2719-3270 bp) (SEQ ID NO:14):

ccgacaccatcgaatggtgcaaacctttcgcggtatggcatgatagcgcccggaagagagtcaattcaggggtgt  
gaatgtgaaaccagtaacgttatacagatgtcgcagagtatccggtgtctcttatcagaccgtttcccgcgtggtgaaccaggcca  
gccacgtttctgcgaaaacgcgggaaaaagtgaagcggcgatggcggagctgaattacattccaaccgcgtggcacaaca  
actggcggggcaaacagtcgttgctgattggcgttgccacctccagctctggccctgcacgcgccgtcgaaattgtcgcggcgat  
taaattctgcgccgatcaactgggtgccagcgtggtggtgtcgtatggtagaacgaagcggcgctgaagcctgtaaagcggcg  
gtgcacaattcttctcgcgcaacgcgtcagtggtgatcattaactatccgctggatgaccaggatgccattgctgtggaagctg  
cctgcactaatgttccggcggtattttctgatgtctctgaccagacacccatcaacagtatttttctcccatgaagacggtacgcga

ctgggcgtggagcatctggctgcattgggtcaccagcaaatacgcgctgtagcgggccattaagtctgtctcggcgcgtctgc  
gtctggctggctggcataaatactcactcgcaatcaaattcagccgatagcggaaacgggaaggcgactggagtccatgtccg  
gtttcaaaaacatgcaaatgctgaatgagggcatcgttccactgcgatgctggttgccaacgatcagatggcgtgggcgc  
aatgcgcgccattaccgagtcgggctgcgcgttggtgcggatatctcggtagtgggatacgacgataccgaagacagctcat  
gttatatcccgccgttaaccacatcaaacaggatttgcctgctggggcaaaccagcgtggaccgcttgcgaactctctcag  
ggccaggcgggtgaagggaatcagctgttgccgctcactggtgaaaagaaaaaccacctggcgccaatacgcaaacg  
cctctccccgcgcgttgccgattcattaatgcagctggcacgacagggttcccgactggaaagcgggcagtgcgcgaacgc  
aattaatgtgagttagctcactcattaggcacaattctcatgtttgacagcttatcatcgactgcacggtgcaccaatgcttctggcgt  
caggcagccatcggaagctgtggtatggctgtgcaggtcgtaaatcactgcataattcgtgtcgtcaaggcgcactcccgttct  
ggataatgtttttgcgccgacatcataacggttctggcaaatattctgaaatgagctgttgacaattaatcatcggtcgtataatgt  
gtggaattgtgagcggataacaattcacacaggaaacagccagtcggttaggtgttttcacgagcacttcaccaacaaggacc  
atagattatgaaaactgaagaaggtaaaactggtaactctggattaacggcgataaaggctataacggtctcgctgaagtcggtgaag  
aaattcgagaaagataccggaattaaagtcaccgttgagcatccggataaactggaagagaaattccacaggttgccgcaact  
ggcgatggccctgacattatcttctgggcacacgaccgcttgggtggctacgctcaatctggcctgttggtgaaatcaccccg  
acaaagcgttcaggacaagctgtatccggttacctgggatgccgttacgttacaacggcaagctgattgcttaccgatcgtgtt  
gaagcgttatcgtgtattataacaagatctgctgccgaaccgcaaaaacctgggaagagatccggcgctggataaagaa  
ctgaaagcgaaaggtaagagcgcgctgatgttaacctgcaagaaccgtacttcacctggccgctgattgctgctgacgggggt  
tatcggttcaagtatgaaaacggcaagtacgacattaaagacgtgggcgtggataacgctggcgcgaaagcgggtctgaccttc  
ctggttgacctgattaaaaacaacacatgaatgcagacaccgattactccatcgagaagctgccttaataaaggcgaaacag  
cgatgaccatcaacggcccggtggcatggtccaacatcgacaccagcaaagtgaattatggtgtaacggtactgccgacctca  
agggtaaccatcaaaccgttcgttgccgtgctgagcgcaggtattaacgccgccagtcggaacaaagagctggcaaaaga  
gttctctgaaaactatctgctgactgatgaaggcttggaagcgggtaataaagacaaaccgtgggtgccgtgagcgtgaagtct  
tacgaggaagagttggcgaaagatccacgtattgccgccacatggaaaacgccagaaaggtgaaatcatgccgaacatcc  
cgcatgtccgctttctggtatgccgtgcgtactgcggtgatcaacgccgccagcggctcagactgtcgatgaagccctga  
aagacgcgcagactaattcgagctgaacaacaacaataacaataacaacaacctcgggatcgagggaaggatttcagaa  
ttcgatcctcttctctgtggccaggcggccctcgagccgggggagaagccctatgcttgccggaatgtggttaagtccttctc  
tcagagctctcacctggtgcgccaccagcgtaaccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatcttttag  
ccagtccagcaacctggtgcgccatcaacgcactcatactggcgagaagccatacaaatgtccagaatgtggcaagtcttctct  
cggcttgacaatctcgtccggcaccaacgtactcacaccggggagaagccctatgcttgccggaatgtggttaagtccttcagcc  
gcagcgataacctggtgcgccaccagcgtacccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatcttttagc  
caggccggccacctggccagccatcaacgcactcatactggcgagaagccatacaaatgtccagaatgtggcaagtcttctct

cggtctgacaatctcgtccggcàccaacgtactcacaccggtaaaaaaactagtgccaggccggccagtacccgtacgacgt  
tccggactacgt

Total: 514 bp

Primer F1-f1 of ZFPm1: 2770 bp to 2850 bp

Primer F1-f2 of ZFPm1: 2740 bp to 2790 bp

Primer F2-f of ZFPm1: 2867 bp to 2940 bp

Primer F2-b of ZFPm1: 2824 bp to 2889 bp

Primer F3-b1 ZFPm1: 2916 bp to 2973 bp

Primer F3-b2 ZFPm1: 2953 bp to 3021 bp

Primer F4-f1 of ZFPm1: 3022 bp to 3102 bp

Primer F4-f2 of ZFPm1: 2992 bp to 3042 bp

Primer F5-f of ZFPm1: 3119 bp to 3192 bp

Primer F5-b of ZFPm1: 3076 bp to 3141 bp

Primer F6-b1 of ZFPm1: 3168 bp to 3225 bp

Primer F6-b2 of ZFPm1: 3205 bp to 3273 bp

(13) Sequence of zinc finger protein ZFPm1

(Translated from pMal-m1: 2719-3270 bp) (SEQ ID NO:75):

AQAALPGEKPYACPECGKSFSDPGHLVRHQRTHTGEKPYKCPECGKSFS  
QRAHLERHQRTHTGEKPYKCPECGKSFSQSSNLVRHQRTHTGEKPYACPECGKS  
FSRSDNLVRHQRTHTGEKPYKCPECGKSFSRSDNLVRHQRTHTGEKPYKCPECG  
KSFSQAGHLASHQRTHTGKKTSGQAG

(14) Partial sequence of pMal-m2 (1-3300 bp) and zinc finger protein ZFPm2

(2719-3270 bp) (SEQ ID NO:15):

ccgacaccatcgaatggtgcaaaaccttcgcggtatggcatgatagcgcccggaagagagtcaattcagggtggt  
gaatgtgaaaccagtaacgttatacagatgtcgcagagtatgccggtgtctcttatcagaccgttcccgcgtggtgaaccaggcca  
gccacgtttctgcgaaaacgcgggaaaaagtgaagcggcgatggcggagctgaattacattccaaccgcgtggcacaaca  
actggcgggcaaacagtcgttgctgattggcgttgccacctccagctctggccctgcacgcgccgtcgcaaattgtcgcggcgat  
taaattctcgcgccgatcaactgggtgccagcgtggtggtgctgatggtagaacgaagcggcgctcgaagcctgtaaagcggcg

gtgcacaatcttctcgcgcaacgcgtcagtggtgatcattaactatccgctggatgaccaggatgccattgctgtggaagctg  
cctgcactaatgttccggcgttatttcttgatgtcttgaccagacacccatcaacagtattatttctcccatgaagacggtagcga  
ctgggcgtggagcatctggctgcattgggtcaccagcaaatcgcgctgttagcgggccattaagtctgtctggcgcgtctgc  
gtctggctggctggcataaatatctcactcgcaatcaaattcagccgatagcggaacgggaaggcgactggagtccatgtccg  
gtttcaacaaacctgcaaatgctgaatgagggcatcgttccactcgcatgctggttccaacgatcagatggcgctgggcgc  
aatgcgcgccattaccgagtcgggctgcgcgttggtgcggatatctcggtagtgggatacgacgataccgaagacagctcat  
gttatatcccgccgttaaccacccatcaaacaggatttgcctgctggggcaaaccagcgtggaccgcttgcactctctcag  
ggccaggcgggtgaagggaatcagctgttcccgtctcactggtgaaaagaaaaaccacccctggcgcccaatcgcaaaccg  
cctctccccgcgcgttggccgattcattaatgcagctggcacgacagggttcccactggaaagcgggcagtgagcgcaacgc  
aattaatgtgagttagctcactcattaggcacaattctcatgtttgacagcttatcatcgactgcacggtgcaccaatgcttctggcgt  
caggcagccatcggaagctgtggtatggctgtgcaggtcgtaaatcactgcataattcggtcgtcgaaggcgactcccgttct  
ggataatgtttttgcgccgacatcataacggttctggcaaatattctgaaatgagctgttgacaattaatcatcggtcgtataatgt  
gtggaattgtgagcggataacaattcacacaggaaacagccagtcggttaggtgttttcacgagcacttcaccaacaaggacc  
atagattatgaaaactgaagaaggtaaactggtaactctggattaacggcgataaaggctataacgggtctcgctgaagtcggtgaag  
aaattcgagaaagataccggaattaaagtcaccgttgagcatccggataaactggaagagaaattcccacaggttgcggcaact  
ggcgatggccctgacattatcttctgggcacacgaccgcttgggtggctacgctcaatctggcctgttggctgaaatcaccccg  
acaaagcgttcaggacaagctgtatccgtttacctgggatgccgtacgttacaacggcaagctgattgcttaccgatcgtgtt  
gaagcgttatcgctgatttataacaaagatctgctgccgaacccgcaaaaacctgggaagagatcccgcgctggataaagaa  
ctgaaagcgaaaggtaagagcgcgctgatgttcaacctgcaagaacctgacttcacctggccgctgattgctgctgacgggggt  
tatgcgttcaagtatgaaaacggcaagtacgacattaaagacgtgggcgtggataacgctggcgcgaaagcgggtctgaccttc  
ctggttgacctgattaaaaacaacacatgaatgcagacaccgattactccatcgagaagctgcctttaataaaggcgaaacag  
cgatgacctcaacggcccggtggcatggtccaacatcgacaccagcaaagtgaattatggtgaacggtactgccgacctca  
agggtcaaccatcaaaccgttcgttggcgtgctgagcgcaggtattaacgccgccagtcggaacaaagagctggcaaaaga  
gttcctcgaaaactatctgctgactgatgaaggctggaagcggtaataaagacaaaccgctgggtgccgtagcgtgaagtct  
tacgaggaagagttggcgaaagatccacgtattgccgccaccatggaaaacgccagaaaggtaaatcatgccgaacatcc  
cgcatgtccgcttcttggtatccgtgcgtactgcggtgatcaacgccgccagcggctcagactgtcgtatgaagccctga  
aagacgcgcagactaattcgagctcgaacaacaacaataacaataacaacaacctcgggatcgaggggaaggatttcagaa  
ttcgatcctcttctctgtggcccaggcggccctcgagcccggggagaagccctatgcttgcggaatgtggtgaagtccttctc  
tcagagctctcacctggtgcgccaccagcgtaccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatcttttag  
ccagtccagcaacctggtgcgccatcaacgcactcatactggcgagaagccatacaaatgtccagaatgtggcaagtcttctct  
cggctcgacaatctcgtccggcaccaacgtactcacaccggggagaagccctatgcttgcggaatgtggtgaagtccttcagcc



gcagcgataacctggtgcgccaccagcgtagccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatcttttagc  
caggccggccacctggccagccatcaacgcactcatactggcgagaagccatacaaatgtccagaatgtggcaagtctttctct  
cggcttgacaatctcgtccggcaccaacgtactcacaccggtaaaaaaactagtgccaggccggccagtaccggtacgacgt  
tccggactacgct

Total: 514 bp

Primer F1-f1 of ZFPm2: 2770 bp to 2850 bp

Primer F1-f2 of ZFP m2: 2740 bp to 2790 bp

Primer F2-f of ZFP m2: 2867 bp to 2940 bp

Primer F2-b of ZFPm2: 2824 bp to 2889 bp

Primer F3-b1 ZFPm2: 2916 bp to 2973 bp

Primer F3-b2 ZFPm2: 2953 bp to 3021 bp

Primer F4-f1 of ZFPm2: 3022 bp to 3102 bp

Primer F4-f2 of ZFPm2: 2992 bp to 3042 bp

Primer F5-f of ZFPm2: 3119 bp to 3192 bp

Primer F5-b of ZFPm2: 3076 bp to 3141 bp

Primer F6-b1 of ZFPm2: 3168 bp to 3225 bp

Primer F6-b2 of ZFPm2: 3205 bp to 3273 bp

- (15) Partial sequence of pMal-m3 (1-3300 bp) and zinc finger protein ZFPm3  
(2719-3270 bp) (SEQ ID NO:16):

ccgacaccatcgaatggtgcaaaacctttcgcggtatggcatgatagcgcccggaagagagtcaattcagggtggt  
gaatgtgaaaccagtaacgttatacgaatgctgcagagtagtccggtgtctcttatcagaccgtttcccgcgtggtgaaccaggcca  
gccacgtttctgcgaaaacgcgggaaaaagtgaagcggcgatggcggagctgaattacattccaaccgcgtggcacaaca  
actggcgggcaaacagtcgttgctgattggcgttgccacctccagtctggccctgcacgcgccgtcgaaattgtcggcgcat  
taaatctcgcgccgatcaactgggtgccagcgtggtgtcgtatgtagaacgaagcggcgctgaagcctgtaaagcggcg  
gtgcacaatcttctcgcgcaacgcgtcagtggtgatcattaactatccgctggatgaccaggatgccattgctgtggaagctg  
cctgcactaatgttcggcggttatttcttgatgtctctgaccagacacccatcaacagtatttttctcccatgaagacggtacgcga  
ctggcggtggagcatctggtcgcattgggtcaccagcaaatcgcgctgttagcggggccattaagtctgtctcggcgcgctctgc  
gtctggtggtggcataaatatctcactcgcaatcaaatcagccgatagcggaacgggaaggcgactggagtgccatgtccg  
gtttcaacaaacctgcaaatgctgaatgagggcatcgttccactgcgatgctggttgccaacgatcagatggcgctggcgcg

aatgcgcgccattaccgagtcgggctgcgcgttggtcggatatctcggtagtgggatacgacgataccgaagacagctcat  
gttatatcccgccgtaaccacatcaaacaggatttctgcctgctggggcaaaccagcgtggaccgcttgcgcaactctctcag  
ggccaggcgggtgaagggaatcagctgttgcctcactggtgaaaagaaaaaccacctggcgcccaatacgcaaacg  
cctctccccgcgcgttggccgattcattaatgcagctggcacgacaggttcccgactggaaagcgggcagtgagcgcaacgc  
aattaatgtgagttagctcactcattaggcacaattctcatgtttgacagcttatcatcgactgcacggtgcaccaatgcttctggcgt  
caggcagccatcggaagctgtggtatggctgtgcaggtcgtaaactactgcataattcgtgtcgtcaaggcgactcccgttct  
ggataatgtttttgcgccgacatcataacggttctggcaaatattctgaaatgagctgttgacaattaatcatcggtcgtataatgt  
gtggaattgtgagcggataacaatttcacacaggaaacagccagtcctttaggtgttttcacgagcacttcaccaacaaggacc  
atagattatgaaaactgaagaaggtaaactggtaatctggattaacggcgataaaggctataacgggtctcgtgaagtcggttaag  
aaattcgagaaagataccggaattaaagtcaccgttgagcatccggataaactggaagagaaattccacaggttgcggcaact  
ggcgatggccctgacattatcttctgggcacacgaccgcttgggtggctacgctcaatctggcctgttggctgaaatcacccgg  
acaaagcgttcaggacaagctgtatccgtttacctgggatgccgtacgttacaacggcaagctgattgcttaccgatcgtgtt  
gaagcgttatcgtgatttataacaaagatctgctgccgaaccgccaaaaacctgggaagagatcccgcgctggataaagaa  
ctgaaagcgaaaggtaagagcgcgctgatgttcaacctgcaagaaccgtactcacctggccgctgattgctgctgacgggggt  
tatgcgttcaagtatgaaaacggcaagtacgacattaagacgtgggcgtggataacgctggcgcgaaagcgggtctgaccttca  
ctggttgacctgattaaaaacaacacatgaatgcagacaccgattactccatcgagaagctgccttaataaaggcgaaacag  
cgatgaccatcaacggcccggtggcatggtccaacatcgacaccagcaaatgaattatggtgtaacggtactgccgaccttca  
agggtcaacctccaaccgttcgttggcgtgctgagcgcaggtattaacgccgccagtcggaacaaagagctggcaaaaga  
gttctctgaaaactatctgctgactgatgaaggctctggaagcgggttaataaagacaaaaccgctgggtgccgtagcgtgaagtct  
tacgaggaagagttggcgaaagatccacgtattgccgccaccatggaaaacgccagaaagggtgaatcatgccgaacatcc  
cgcatgtccgcttcttggatgccgtgcgtactgcggtgatcaacgccgccagcggctcgtcagactgtcgtgatgaagccctga  
aagacgcgcgactaattcgagctgaacaacaacaataacaataacaacaacctcgggatcgagggaaggatttcagaa  
ttcggatcctcttctctgttggccaggcggccctcgagcccggggagaagccctatgcttgcggaatgtggttaagtccttca  
gcgatcctggccacctggttgcgccaccagcgtacccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatctttta  
gcaccagcggctccctggtgcgccatcaacgcactcatactggcgagaagccatacaaatgtccagaatgtggcaagtcttca  
gccagagctccagcctggtgcgccaccaacgtactcacaccggggagaagccctatgcttgcggaatgtggttaagtccttca  
gccagagcagctccctggtgcgccaccagcgtacccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatctttt  
agtactgccgcgaccttgcctgccatcaacgcactcatactggcgagaagccatacaaatgtccagaatgtggcaagtcttct  
cccaatccagccatctcgtccggcaccaacgtactcacaccggtaaaaaactagtggccaggccggccagtagccgtacgac  
gttccgactacgct

Total: 514 bp

Primer F1-f1 of ZFPm3: 2770 bp to 2850 bp

Primer F1-f2 of ZFP m3: 2740 bp to 2790 bp

Primer F2-f of ZFP m3: 2867 bp to 2940 bp

Primer F2-b of ZFPm3: 2824 bp to 2889 bp

Primer F3-b1 ZFPm3: 2916 bp to 2973 bp

Primer F3-b2 ZFPm3: 2953 bp to 3021 bp

Primer F4-f1 of ZFPm3: 3022 bp to 3102 bp

Primer F4-f2 of ZFPm3: 2992 bp to 3042 bp

Primer F5-f of ZFPm3: 3119 bp to 3192 bp

Primer F5-b of ZFPm3: 3076 bp to 3141 bp

Primer F6-b1 of ZFPm3: 3168 bp to 3225 bp

Primer F6-b2 of ZFPm3: 3205 bp to 3273 bp

(16) Partial sequence of pMal-m4 (1-3300 bp) and zinc finger protein ZFPm4

(2719-3270 bp) (SEQ ID NO:17):

ccgacaccatcgaatggtgcaaaacctttcgcggtatggcatgatagcgcccggaagagagtcaattcagggtggt  
gaatgtgaaaccagtaacgttatcagatgtcgcagagtatgccggtgtctcttatcagaccgtttcccgctggtgaaccaggcca  
gccacgtttctgcgaaaacgcgggaaaaagtgggaagcggcgatggcggagctgaattacattccaaccgcgtggcacaaca  
actggcggggcaaacagtcgttgctgattggcgttgccacctccagctcgtggccctgcacgcgccgtcgcaaattgtcgcggcgat  
taaatctcgcgccgatcaactgggtgccagcgtggtggtgtcgtatgtagaacgaagcggcgctgaagcctgtaaagcggcg  
gtgcacaatcttctcgcgaacgcgtcagtggtgatcattactatccgctggatgaccaggatgccattgtgtggaagctg  
cctgcactaatgttccggcggtatttcttgatgtctctgaccagacacccatcaacagtatttttctcccatgaagacggtacgga  
ctgggcgtggagcatctggtcgcattgggtcaccagcaaatcgcgctgttagcgggcccattaagtctgtctcggcgcgctctgc  
gtctggctggctggcataaatactcactcgaatcaaattcagccgatagcggaacgggaaggcgactggagtgccatgtccg  
gttttcaacaaccatgcaaatgctgaatgagggcatcgttccactgcgatgctggttgccaacgatcagatggcgctgggcgc  
aatgcgcgccattaccgagtcgggctgcgcgttggtgcggatatctcggtagtgggatacgacgataccgaagacagctcat  
gttatatcccgccgttaaccaccatcaaacaggattttgcctgctggggcaaaccagcgtggaccgcttgctgcaactctctcag  
ggccaggcgggtgaagggaatcagctgttgccgctcactgggtgaaaagaaaaaccacctggcgcccaatacgcgaaccg  
cctctccccgcgcttgccgattcattaatgcagctggcacgacaggtttcccactggaaagcgggcagtgagcgcaacgc  
aattaatgtgagttagctcactcattaggcacaattctcatgtttgacagcttatcatcgactgcacggtgcaccaatgcttctggcgt

caggcagccatcggaagctgtggtatggctgtgcaggtcgtaaactactgcataattcgtgtcgtcaaggcgactcccgttct  
ggataatgtttttgcgccgacatcataacggttctggcaaatattctgaaatgagctgttgacaattaatcatcggtcgtataatgt  
gtggaattgtgagcggataacaattcacacaggaaacagccagtcctgttaggtgttttcacgagcacttcaccaacaaggacc  
atagattatgaaaactgaagaaggtaaactggtaatctggattaacggcgataaaggctataacggctcgtgaagtcggttaag  
aaattcgagaaagataccggaattaaagtcaccgttgagcatccggataaactggaagagaaattcccacaggttgccggaact  
ggcgatggccctgacattatcttctgggcacacgaccgcttgggtggtacgtcaatctggcctgttggtgaaatcaccccg  
acaaagcgttcaggacaagctgtatccgtttacctgggatgccgtacgttacaacggcaagctgattgcttaccgatcgtgtt  
gaagcgttatcgtgattataaacaagatctgctgccgaacccgccaaaacctgggaagagatccggcgctggataaagaa  
ctgaaagcgaaaggtaagagcgcgctgatgttcaacctgcaagaaccgtacttcacctggccgctgattgctgctgacgggggt  
tatgcgttcaagtatgaaaacggcaagtacgacattaaagacgtggcgctggataacgctggcgcgaaagcgggtctgacctc  
ctggttgacctgattaaaaacaacacatgaatgcagacaccgattactccatcgagaagctgccittataaaggcgaaacag  
cgatgacctcaacggcccggtggcgatggtccaacatcgacaccagcaaatgaattatggtgaacggtactgccgacctca  
agggtcaacctccaaaccgttcgttggcgctgctgagcgcaggtattaacgccgccagtcgcaacaagagctggcaaaaga  
gttctcgaaaactatctgctgactgatgaaggctggaagcggtaataaagacaaaccgctgggtgccgtagcgtgaagtct  
tacgaggaagagtggcgaaagatccacgtattgccgccaccatggaaaacgccagaaaggtgaaatcatgccgaacatcc  
cgcatgtccgcttctggtatgccgtgctgactgcggtgatcaacgccgcagcggtcgtcagactgtcgtgaagccctga  
aagacgcgcagactaattcgagctcgaacaacaacaataacaataacaacacctcgggatcgagggaaggatttcagaa  
ttcggatcctcttctctgtggcccaggcggccctcgagcccggggagaagccctatgcttgtccggaatgtggttaagtccttca  
ggcagagcagctccctggtgcgccaccagcgtaaccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatctttt  
agccagagcagcagcctggtgcgccatcaacgcactcacttggcgagaagccatacaaatgtccagaatgtggcaagtcttctc  
agtgttgcgtgatcttgcgaggcaccaacgtactcacaccggggagaagccctatgcttgtccggaatgtggttaagtccttctc  
tcagagctctcacctggtgcgccaccagcgtaaccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatcttttag  
ccgcagcgataacctggtgcgccatcaacgcactcacttggcgagaagccatacaaatgtccagaatgtggcaagtcttctca  
acttcaggccatttggctccgtcaccaacgtactcacaccggtaaaaaaactagtggccaggccggccagtaaccgtacgacgtt  
ccggactacgct

Total: 514 bp

Primer F1-f1 of ZFPm4: 2770 bp to 2850 bp

Primer F1-f2 of ZFPm4: 2740 bp to 2790 bp

Primer F2-f of ZFPm4: 2867 bp to 2940 bp

Primer F2-b of ZFPm4: 2824 bp to 2889 bp

Primer F3-b1 ZFPm4: 2916 bp to 2973 bp

Primer F3-b2 ZFPm4: 2953 bp to 3021 bp

Primer F4-f1 of ZFPm4: 3022 bp to 3102 bp

Primer F4-f2 of ZFPm4: 2992 bp to 3042 bp

Primer F5-f of ZFPm4: 3119 bp to 3192 bp

Primer F5-b of ZFPm4: 3076 bp to 3141 bp

Primer F6-b1 of ZFPm4: 3168 bp to 3225 bp

Primer F6-b2 of ZFPm4: 3205 bp to 3273 bp

(17) Partial sequence of pMal-Ap3 (1-3300 bp) and zinc finger protein ZFPAp3  
(2719-3270 bp) (SEQ ID NO:18):

ccgacaccatcgaatgggtgcaaaaccttgcggtatggcatgatagcgcccggaagagagtcaattcagggtggt  
gaatgtgaaaccagtaacgttatacagatgtcgcagagtatgccggtgtcttcatcagaccgtttcccgctgggtgaaccaggcca  
gccacgtttctgcgaaaacgcgggaaaaagtgaagcggcgatggcggagctgaattacattccaaccgcgtggcacaaca  
actggcggggcaaacagtcgttgctgattggcgttgccacctccagcttgccctgcacgcgccgtcgaaattgtcgcggcgat  
taaatctcgcgccgatcaactgggtgccagcgtggtggtcgcgatggtagaacgaagcggcgctgaagcctgtaaagcggcg  
gtgcacaatcttctcgcgaacgcgtcagtggtgatcattaactatccgctggatgaccaggatgccattgctgtggaagctg  
cctgcactaatgttccggcgttatttcttgatgtcttgaccagacacccatcaacagtattatttctcccatgaagacggtacgcga  
ctgggcgtggagcatctggtcgcattgggtcaccagcaaatcgcgctgttagcgggcccattaagtctgtctcggcgcgtctgc  
gtctggtggtggcgtgataataatctcactcgcaatcaaattcagccgatagcggaaacgggaaggcgactggagtgccatgtccg  
gtttcaacaacatgcaaatgctgaatgagggcacgttccactgcgatgctggttgccaacgatcagatggcgctgggcgc  
aatgcgcgccattaccgagtcggggtgcgcgttggtgcggatatctcggtagtgggatacgacgataccgaagacagctcat  
gttatatcccgccgttaaccacatcaaacaggatttgcctgctggtgggcaaaccagcgtggaccgcttgctgcaactctcag  
ggccaggcgggtgaagggaatcagctgttgccgctcactggtgaaaagaaaaaccacctggcgcccaatacgcaaacg  
cctctccccgcgcgttggccgattcattaatgcagctggcacgacaggttcccactggaaagcgggcagtgagcgcaacgc  
aattaatgtgagttagctcactcattaggcacaattctcatgttgacagcttatcatcactgcacggtgcaccaatgcttctggcgt  
caggcagccatcggaagctgtggtatggctgtgcaggtcgtaaatcactgcataatcgtgtcgtcaaggcgcactcccgttct  
ggataatgtttttgcgccgacatcataacggttctggcaaatattctgaaatgagctgttgacaattaatcatcggtcgtataatgt  
gtggaattgtgagcggataacaatttcacacaggaaacagccagtcggttaggtgtttcacgagcacttcaccaacaaggacc  
atagattatgaaaactgaagaaggtaaactggaatctggattaacggcgataaaggctataacggtctcgtgaagtcggtgaag  
aaattcgagaaagataaccggaattaaagtcaccgttgagcatccggataaactggaagagaaattcccacaggttgccggaact

ggcgatggccctgacattatcttctgggcacacgaccgctttgggtggctacgctcaatctggcctgttggtgaaatcaccccgga  
acaaagcgttccaggacaagctgtatccgtttacctgggatgccgtacgttacacggcaagctgattgcttaccgatcgtgtt  
gaagcgttatcgtgattataacaaagatctgtgccgaacccgccaaaacctgggaagagatcccgcgctggataaagaa  
ctgaaagcgaaaggaagagcgcgctgatgttcaacctgcaagaacctgacttcacctggccgctgattgctgctgacgggggt  
tatgcttcaagtatgaaaacggcaagtacgacattaaagacgtggcgctggataacgctggcgcgaaagcgggtctgacctt  
ctggttgacctgattaaaaacaaacacatgaatgcagacaccgattactccatcgagaagctgcctttaataaaggcgaaacag  
cgatgacctcaacggcccggtggcgatggtccaacatcgacaccagcaaagtgaattatggtgtaacgggtactgccgacctta  
agggtaaccatccaaaccgttctggcgctgctgagcgcaggtattaacgccgccagtcgaaacaaagagctggcaaaaga  
gttctctgaaaactatctgtgactgatgaaggctctggaagcgggttaataaagacaaaaccgctgggtgccgtagcgtgaagtct  
tacgaggaagagttggcgaaagatccacgtattgccgccaccatggaaaacgccagaaaggtgaaatcatgccgaacatcc  
cgcagatgtccgctttctggtatgccgtgctgactgcggtgatcaacgccgccagcggctcgcagactgtcgtatgaagccctga  
aagacgcgcgagactaattcgagctcgaacaacaacaataacaataacaacacctcgggatcgagggaaggatttcagaa  
ttcggatcctcttctctgtggcccaggcggccctcgagcccggggagaagccctatgcttgcggaatgtggttaagtccttca  
gccagagcagctccctggtgcgccaccagcgtaccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatctttt  
agccagtccagcaacctggtgcgccatcaacgcactcatactggcgagaagccatacaaatgtccagaatgtggcaagtctt  
agccagtccagcaacctggtgcgccaccaacgtactcacaccggggagaagccctatgcttgcggaatgtggttaagtcctt  
agcaccagtggctccttggttagacaccagcgtaccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatctttt  
agccagcgcgcccacctggaacgccatcaacgcactcatactggcgagaagccatacaaatgtccagaatgtggcaagtctt  
ctcaactcaggcaacttggtccgtcaccaacgtactcacaccggtaaaaaactagtggccaggccggccagtagccgtacga  
cgttccggactacgt

Total: 514 bp

Primer F1-f1 of ZFPap3: 2770 bp to 2850 bp

Primer F1-f2 of ZFPap3: 2740 bp to 2790 bp

Primer F2-f of ZFPap3: 2867 bp to 2940 bp

Primer F2-b of ZFPap3: 2824 bp to 2889 bp

Primer F3-b1 ZFPap3: 2916 bp to 2973 bp

Primer F3-b2 ZFPap3: 2953 bp to 3021 bp

Primer F4-f1 of ZFPap3: 3022 bp to 3102 bp

Primer F4-f2 of ZFPap3: 2992 bp to 3042 bp

Primer F5-f of ZFPap3: 3119 bp to 3192 bp

Primer F5-b of ZFPap3: 3076 bp to 3141 bp

Primer F6-b1 of ZFPAp3: 3168 bp to 3225 bp

Primer F6-b2 of ZFPAp3: 3205 bp to 3273 bp

(18) Sequence of oligo m12 (SEQ ID NO:19):

Biotin-GGa gcc tcc ttc ctc ctc tca ctc GGG TTTT CCC gag tga gag gag gaa gga  
ggc tCC

Total: 58 bp

Lower case sequence: ZFPm1 and ZFPm2 binding site m12

(19) Sequence of oligo m34 (SEQ ID NO:20):

Biotin-GGa gcc aac tac tac ggc tcc ctc acc GGG TTTT CCC ggt gag gga gcc gta  
gta gtt ggc tCC

Total: 58 bp

Lower case sequence: ZFPm3 and ZFPm4 binding site m34

(20) Sequence of oligo Ap3 (SEQ ID NO:21):

Biotin-GGt tac ttc ttc aac tcc atc GGG TTTT CCC gat gga gtt gaa gaa gta aCC

Total: 52 bp

Lower case sequence: ZFPAp3 binding site

(21) Sequence of oligo NRI-1 (SEQ ID NO:22):

Biotin-GG ttc tac ccc tcc cac cgc GGG TTTT CCC gcg gtg gga ggg gta gaa CC

Total: 51 bp

(22) Sequence of oligo NRI-2 (SEQ ID NO:23):

Biotin-GG tgc ggc gac tgc agc agc GGG TTTT CCC gct gct gca gtc gcc gca CC

Total: 51 bp

(23) Sequence of oligo hHD-I (SEQ ID NO:24):

Biotin-GG ggc ccc gcc tcc gcc ggc GGG TTTT CCC gcc ggc gga ggc ggg gcc  
CC

Total: 51 bp

(24) Sequence of oligo hHD-II (SEQ ID NO:25):

Biotin-GG ggc agc ccc cac ggc gcc GGG TTTT CCC ggc gcc gtg ggg gct gcc CC

Total: 51 bp

(25) Sequence of oligo c5p1-g (SEQ ID NO:26):

Biotin-GG gac acc ccc aac ccc gcc GGG TTTT CCC ggc ggg gtt ggg ggt gtc CC

Total: 51 bp

(26) Sequence of oligo c5p3-g (SEQ ID NO:27):

Biotin-GG ctc tgc tca tcc cac tac GGG TTTT CCC gta gtg gga tga gca gag CC

Total: 51 bp

(27) Sequence of oligo B3c2 (SEQ ID NO:28):

Biotin-GG acc cac cgc gtc ccc tcc GGG TTTT CCC gga ggg gac gcg gtg ggt CC

Total: 51 bp

(28) Sequence of oligo e2c-g (SEQ ID NO:29):

Biotin-GG cac tgc ggc tcc ggc ccc GGG TTTT CCC ggg gcc gga gcc gca gtg CC

Total: 51 bp

(29) Sequence of primer Ap3-F (SEQ ID NO:30):

GGCGAGAGGGAAGATCCAG

Total: 19 bp

(30) Sequence of primer NZlib5' (SEQ ID NO:31):

GGCCCAGGCGGCCCTCGAGC

Total: 20 bp

(31) Sequence of primer Ap3f4-R (SEQ ID NO:32):



CTCCTCTAATACGACTCACTATAGGGACACTCACCTAGCCTCTG

Total: 44 bp

(32) Sequence of primer m4f3-R (SEQ ID NO:33):

CCTCGCAAGATCACGACAATC

Total: 21 bp

(33) Sequence of quantitative PCR probe for AP3 (SEQ ID NO:34):

CCATTTCATCCTCAAGACGACGCAGCT

Total: 27 bp

(34) Sequence of quantitative PCR primer for AP3 (Forward) (SEQ ID NO:35):

TTTGGACGAGCTTGACATTGAC

Total: 22 bp

(35) Sequence of quantitative PCR primer for AP3 (Reverse) (SEQ ID NO:36):

CGCGAACGAGTTTGAAAGTG

Total: 20 bp

(36) Sequence of 2C7-SID (Figure 3) (SEQ ID NO:66):

gacggatcgggagatctcccgatcccatggtcgactctcagtacaatctgctctgatgccgcatagttaagccagta  
tctgctccctgcttggtgaggtcgctgagtagtgcgcgagcaaaattaaagctacaacaaggcaaggcttgaccgacaatt  
gcatgaagaatctgcttagggtaggcgtttgcgctgcttcgcatgtacgggccagatatacgcttgacattgatttagta  
gttattaatagtaataattacgggggtcatttagtcatagcccatatatggagttccggttacataacttacggtaaattggccgcct  
ggctgaccgccaacgacccccgccattgacgtcaataatgacgtatgttcccatagtaacgccaatagggactttccattgac  
gtcaatgggtggactatttacggtaaactgccacttggcagtagcatcaagtgtatcatatgccaagtacgccccattgacgtca  
atgacggtaaattggccgcctggcattatgccagtagacgttatgggactttcctacttggcagtagacatctacgtattagtc  
cgctattaccatggtgatgcggttttggcagtagcatcaatgggcgtggatagcggttgactcacggggatttcaagtctccacc  
ccattgacgtcaatgggagttgttttggcaccaaaatcaacgggactttccaaaatgtcgtaacaactccgccccattgacgcaa  
atgggcggttaggcgtgtacgggtgggaggtctatataagcagagctctctggctaactagagaacccactgcttactggcttatcg  
aaattaatacgaactcactatagggagaccaagctggctagcatggccgctgccgtgcgcatgaacatccagatgctgctcgaa  
ggcgtgattatctggaacgccgggagcggaagccgagcacggctacgccagcatgctgccatatccgaaaaagaaacgc  
aagggtggccaggcgccctcgagccctatgcttgcctgtcgagtcctgcgatcgccgcttttctaagtcggctgatctgaagc  
gccatatccgcattccacagggccagaagcccttccagtgtcgaatatgcatgcgtaacttcagtcgtagtaccaccttaccac  
ccacatccgcacccacacaggcgagaagccctttgcctgtgacattgtgggaggaagttgccaggagtgatgaacgcaaga  
ggcataccaaaatccataccgggtgagaagccctatgcttgcctgtcgagtcctgcgatcgccgcttttctaagtcggctgatctg  
aagcgccatatccgcattccacagggccagaagcccttccagtgtcgaatatgcatgcgtaacttcagtcgtagtaccacctta

ccacccacatccgcacccacacaggcgagaagccttttgctgtgacattgtgggaggaagtttgccaggagtgaacgca  
agaggcataccaaaatccatttaagacagaaggactctagaactagtggccaggccggccagtaccctgacgacttccggac  
tacgcttcttgaaagcttggtaccgagctcgatccactagtcagtggtggaattctgcagatatccagcacagtggcgcc  
gctcgagtctagaggggccgttaaacccgctgatcagcctgactgtgccttctagttgccagccatctgtgtttgcccccccc  
cgtgccttcttgaccctggaaggtgccactcccactgtcctttcctaataaatgaggaaattgcacgcattgtctagtaggtgt  
cattctattctggggggtgggggtggggcaggacagcaagggggaggattgggaagacaatagcaggcatgctggggatgcg  
gtgggctctatggcttctgaggcggaagaaccagctggggctctaggggggtatccccacgcgccctgtagcggcgcataaag  
cgcggcggggtgtggtggttacgcgcagcgtgaccgtacacttgccagcgccctagcggcgctccttctgcttcttcccttct  
ttctgccacgttcggcggttccccgtcaagctctaaatcggggcatccctttagggttccgatttagtctttacggcacctcga  
ccccaaaaacttgattaggggtgatggtcacgtagtggggcatcgccctgatagacggttttcgcccttgacgttggagtccac  
gttcttaatatgtgactctgttccaaactggaacaacactcaaccctatctcggctattctttgattataagggaatttggggattt  
cggcctattggttaaaaaatgagctgatttaacaaaaatlaacgcgaattaattctgtggaatgtgtgtcagttagggtgtggaag  
tccccaggctccccaggcaggcagaagtatgcaaagcatgcattcaattagtcagcaaccagggtgtggaaagtccccaggct  
ccccagcaggcagaagtatgcaaagcatgcattcaattagtcagcaaccatagtcgcccccctaactccgcccatccccggcc  
taactccgccagttccgccattctccgcccatggctgactaatttttttattatgcagaggccgaggccgctctgctctga  
gtattccagaagtagtgaggaggctttttggaggcctaggttttgcaaaaagctccgggagcttgtatatccattttcggtatc  
gatcagcacgtgttgacaattaatcatcgccatagtatatcgccatagtataatacgaagaagtgaggaaactaaacatggccaa  
gttgaccagtgcgttccgggtgctcaccgcgcgcgacgtcgccggagcggtcagttctggaccgaccggctcggttctccc  
gggacttctgaggagcacttcgccggtgtggttcgggacgacgtgaccctgttcacagcgggtccaggaccagggtgtg  
ggcggaacacacctggcctgggtgtgggtgcgcggcctggacgagctgtacgccgagtggtcggaggtcgtgtccacgaa  
cttcgggagcgcctccgggcccggccatgaccgagatcggcgagcagccgtggggggcgggagttcgccctgcgcgaccggg  
ccggcaactcgtgcacttcgtggccgaggagcaggactgacacgtgctacgagatttcgattccaccgccccttctatgaaa  
ggttgggcttcggaatcgtttccgggacgccggctggatgatctccagcgcggggatctcatgttgaggttcttccccaccc  
caactgtttattgcagcttataatggttacaataaagcaatagcatcacaatttcacaataaagcattttttactgcattctagtt  
gtggtttgtccaaactcatcaatgtatcttatcatgtctgtataccgtcgacctctagctagagcttggcgtaatcatggtcatagctgt  
ttctgtgtgaaattgttatccgctcacaattccacacaacatacagaccggaagcataaagtgtaaagcctggggtgcctaataga  
gtgagctaactcacattaattgcgttgcgctcactgcccgtttccagtcgggaacctgtcgtgccagctgcattaatgaatcggc  
caacgcgcggggagaggcggttgcgtattggcgctcttccgcttctcgtcactgactcgtcgctcggtcgttccggtgc  
ggcgagcggtatcagctcactcaaggcggttaatacggttatccacagaatcaggggataacgcaggaaagaacatgtgagc  
aaaaggccagcaaaaggccaggaaaccgtaaaaaggccgcgttgctggcgtttttccataggtccgccccctgacgagcatc  
acaaaaatcgacgtcaagtcagaggtggcgaaacccgacaggactataaagataaccaggcggttccccctggaagctccctc  
gtgcgtctctgttccgacctgcgcttaccggatacctgtccgcttctcccttcgggaagcgtggcgcttctcaatgtca  
cgctgtaggtatctcagttcggtgttaggtcgttcgctccaagctgggctgtgtgcacgaacccccgttcagcccagccgtcgc  
ccttatccggttaactatcgtcttgagtccaacccggtaagacacgacttatcgccactggcagcagccactggttaacaggattag  
cagagcgaggtatgtaggcggtgtacagagttctgaagtgggtggcctaactacggctacactagaaggacagtatttggtatc  
tgcgctctgtggaagccagttaccttcggaaaaagagttggtagctcttgatccggcaacaaaccaccgctggttagcggtgtt  
ttttgtttgcaagcagcagattacgcgcagaaaaaaaggatctcaagaagatcctttgatcttttctacggggtctgacgctcagtg  
gaacgaaaaactcacgttaagggaatttggcatgagattatcaaaaaggatcttcacctagatccttttaataaaaaatgaagttta  
aatcaatctaaagtatatatgagtaaaacttggtctgacagttaccaatgcttaatcagtgaggcacctatctcagcgatctgtctatttc  
gttcatccatagttgcctgactccccgtcgtgtagataactacgatacgggagggttaccatctggccccagtgctgcaatgata  
ccgcgagacccacgctcaccggctccagattatcagcaataaaccagccagccggaaggggccgagcgcagaagtgttcct  
gcaactttatccgctccatccagcttattaattgttgcgggaagctagagtaagtagtccgagtttaattgtgcgaacgttgt  
tgccattgtacaggcatcgtggtgtcacgctcgtcgtttggtatggcttattcagctccgggttccaacgatcaaggcgagttac  
atgatccccatgttgtgcaaaaaagcggttagctccttcggctcctccgatcgtgtgcagaagtaagtggccgcagtggtatcact  
catggttatggcagcactgcataattcttactgtcatgccatccgtaagatgcttttctgtgactgggtgagtactcaaccaagtcatt  
ctgagaatagtgatgcggcgaccgagttgctcttggccggcgtcaatacgggataataccgcgccacatagcagaactttaaaa

gtgctcatcattggaaaacgttcttcggggcgaaaactctcaaggatcttaccgctgttgagatccagttcgatgaaccactcgt  
gcaccaactgatcttcagcatctttactttcaccagcgtttctgggtgagcaaaaacaggaaggcaaaatgccgcaaaaaagg  
gaataagggcgacacggaaatgttgaatactcatactcttcttttcaatattattgaagcatttatcagggttattgtctcatgagcg  
gatacatatttgaatgtatttagaaaaataaacaatatgggggtccgcgcacattccccgaaaagtgccacctgacgtc